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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/827,078	04/19/2004	Brandon M. Beck	T00113	1866

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EXAMINER

SAXENA, AKASH

ART UNIT	PAPER NUMBER
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2128

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	01/29/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary

Application No.

10/827,078

Applicant(s)

BECK ET AL.

Examiner

Akash Saxena

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 29 December 2006.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-22 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-22 is/are rejected.
- 7) ☒ Claim(s) 8, 14 and 22 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date. _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. Claim(s) 1-22 has/have been presented for examination based on amendment filed on 29th December 2006.
2. Correction to specification are noted.
3. Claim(s) 1, 3-4 is/are amended.
4. Claim(s) 5-22 is/are new claim(s) added with this amendment.
5. Claim(s) 8, 14 and 22 are remain Objected to.
6. Claim(s) 1-22 remain rejected under 35 USC § 101.
7. Claim(s) 1-22 remain rejected under 35 USC § 112.
8. Claim(s) 1-22 remain rejected under 35 USC § 102.
9. The arguments submitted by the applicant have been fully considered. Claims 1-22 remain rejected and this action is made FINAL. The examiner's response is as follows.

Response to Applicant's Remarks for 35 U.S.C. § 101

10. Claims 1-4 were rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter.

Regarding Claim 1

Applicant has argued the following:

The July 5, 2006 Office Action (referred to herein as the "Office Action"), citing *State Street Bank & Trust Company v. Signature Financial Group, Inc.*, 149 F.3d 1368 (Fed. Cir. 1998), states that, "the claimed invention does not physically transform an article or physical object to a different state or thing, so to be eligible for patent protection, the claimed invention as a whole must accomplish a practical application." Office Action, p. 3.

Applicants respectfully submit that the Claims 1-4 are directed towards statutory subject matter because, for example, claims 1-4 are directed towards consolidating multiple, physical models into a single, consolidated, physical model. The model is useful because, in at least one embodiment, the model "refers to a collection of rules that define the buildable configurations of one or more products." Present Application, para.10.

In *State Street Bank*, the District Court rejected claims in the 5,193,056 patent under 35 U.S.C. § 101. The Federal Circuit reversed the District Court. The Federal Circuit stated: Today, we hold that the transformation of data, representing discrete dollar amounts, by a machine through a series of mathematical calculations into a final share price, constitutes a practical application of a mathematical algorithm, formula, or calculation, because it produces "a useful, concrete and tangible result"--a final share price momentarily fixed for recording and reporting purposes and even accepted and relied upon by regulatory authorities and in subsequent trades. *State Street Bank*, 149 F.3d 1368 (Fed. Cir. 1998).

The claim as presented does not disclose, "consolidating multiple **physical** models", which is the argument presented above against the practical use. There is data transformation, however there is no specific practical application – e.g. a final share price momentarily fixed for recording and reporting purposes and even accepted and relied upon by regulatory authorities and in subsequent trades. The model do not represent any physical system, but are have been the center of study in abstract form, as can be seen by K.L. McMillan's publication "symbolic model Checking: An Approach to State Explosion Problem". Applicant has also cited U.S. Patent No. 5,825,651 is directed

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towards graphical modeling of a product defined by system. Examiner has also cited U.S. Patent No. 5,515,524, which also performs configuration for a structural model rather an abstract model.

Examiner for reasons given above maintains the rejection.

Response to Applicant's Remarks for 35 U.S.C. § 112¶1st

11. Applicant has argued that current disclosure has claimed practical application.

Examiner respectfully disagrees, as there is not claimed practical application of the disclosure. See comments on the cited patents above.

Response to Applicant's Remarks for 35 U.S.C. § 112¶1st

12. The language is "a non-ancestral family of the constraint", has not been removed from the claim as stated. Hence the rejection is maintained.

Response to Applicant's Remarks for 35 U.S.C. § 102

13. Claims 1-4 were rejected under 35 U.S.C. 102(b) as being anticipated by U.S.

Patent Publication No. 2002/0165701 by Lichtenberg et al (Lichtenberg hereafter).

Regarding Claim 1

Applicant has argued that newly amended limitation, at least one model includes a rule that causes a configuration conflict with another model", as not being taught by Lichtenberg.

Examiner has provided appropriate rejection in the claim rejection section. However arguments presented are addressed here as well.

Specifically applicant has argued:

"Thus, Applicants respectfully submit that Lichtenberg teaches that during configuration a user's particular selection can exclude other possible choices. In other words, selection of a particular component can exclude selection of other components.

First, Applicants respectfully submit that the alternative choices taught by Lichtenberg are within a single DAG. Claims 1, 3, and 4 recite "at least one model includes a rule that causes a configuration conflict with another model."

Applicants have themselves addressed the first argument. The fact that Lichtenberg teaches selection of a particular component can exclude selection of other components shows a conflict was detected and a particular configuration path was chosen in the directed acyclical graphs (DAG - which represents a product configuration flow in view of the rules for each feature/component/attribute). Lichtenberg teaches that when the DAG are combined, such conflicts and dependencies are taken care of (Lichtenberg: [0062][0076][0085]).

Applicant has further argued:

Second, Applicants respectfully submit that providing for alternatives in a single configuration model is significantly different than having "at least one model [that] includes a rule that causes a configuration conflict with another model." Claims 1, 3, and 4. A configuration alternative as taught by Lichtenberg relates to excluding one or more choices when another choice is made. For example, selection of the color 'red' excludes the selection of blue and any other color. Applicants respectfully submit that **excluding alternatives when a configuration selection is made is significantly different than a rule that "causes a configuration conflict."** Claims 1, 3, and 4. A configuration conflict would exist in this example when one model allows the color 'red' and another model does not. Another example of a configuration conflict between two models is when a first model releases a buildable configuration of ENGINE 2 in MARKET 1, and a second model to be combined with the first model does not release ENGINE 2 in MARKET 1. Present Application, Para. 55.

Examiner respectfully disagrees with the applicant and fails to see his point.

Successful combination of two DAGs, possibly representing two different major configurations is well known in the art and taught by Lichtenberg (Lichtenberg: [0062][0076][0085]). When there is DAGs are combined the conflicting configurations would not be present on the same path, thus the first example scenario would not occur as once in the configuration path of "another model", red would not be present as an option (Lichtenberg: [0092]-[0096]).

Similarly, The incompatible option of second model having "ENGINE 2 in the MARKET 1" would not be encountered if the second model and first model DAGs are combined appropriately (Lichtenberg: [0062]), because that branch would never have been taken – i.e. the incompatible option would not be offered.

Further, even if such a conflict happens, Lichtenberg teaches detecting such a configuration conflict in the combined DAG (Lichtenberg: [0102]-[0105] – emphasis on [0105]). Further, Lichtenberg shows combining the DAGs with compatibility check (Lichtenberg: [0134]-[0150]).

Hence the arguments presented are considered to be unpersuasive.

Claim Objections

14. Claims 8, 14 and 20 do not end in a period, instead end with a semi-colon.

Claim Rejections - 35 USC § 101

(Repeated from Previous Action)

35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

15. **Claims 1-22 are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter.**

Regarding Claim 1-22

Claims 1-22 recite a abstract idea of combining two models (DAG) which specification describes as represented by Directed Acyclic Graphs (DAG) (Specification: (110, Fig.2). Combining DAG is a mathematical concept. Binary decision diagram (BDD) is a form of DAG and a paper showing the combining BDD¹ is included as prior art.

Claims 1-22 do not claim any practical application of the combination.

Section 2106 [R-2] (Patentable Subject Matter - Computer-Related Inventions) of the MPEP recites the following:

If the "acts" of a claimed process manipulate only numbers, abstract concepts or ideas, or signals representing any of the foregoing, the acts are not being applied to appropriate subject matter. Schrader, 22 F.3d at 294-95, 30 USPQ2d at 1458-59. Thus, a process consisting solely of mathematical operations, i.e., converting one set of numbers into another set of numbers, does not manipulate appropriate subject matter and thus cannot constitute a statutory process.

"In practical terms, claims define nonstatutory processes if they: consist solely of mathematical operations without some claimed practical application (i.e., executing a "mathematical algorithm"); or - simply manipulate abstract ideas, e.g., a bid

¹ Symbolic Model Checking An approach to the state explosion problem; Kenneth L. McMillan, May 1992, Pg. 41-44

(Schrader, 22 F.3d at 293-94, 30 USPQ2d at 1458-59) or a bubble hierarchy (Warmerdam, 33 F.3d at 1360, 31USPQ2d at 1759), without some claimed practical application."

Claims 1-4 are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter. As described through these claims, the claimed invention does not physically transform an article or physical object to a different state or thing, so to be eligible for patent protection, the claimed invention as a whole must accomplish a practical application. That is, it must produce a useful, concrete and tangible result." State Street, 149 F.3d at 1373-74, 47 USPQ2nd at 160102. The purpose of this requirement is to limit patent protection to inventions that possess a certain level of "real world" value, as opposed to subject matter that represents nothing more than an idea or concept.

Further, claims 1-4 do not seem to produce a tangible result. The tangible requirement of State Street decision requires that the claims must recite at least one 35 USC 101 judicial exception, in that the process claim must set forth a practical application of the 35 USC 101 judicial exception. Benson, 409 U.S. at 71-72, 175 USPQ at 676-77 (invention ineligible because had "no substantial practical application.").

Claim Rejections - 35 USC § 112¶1st

(Repeated from Previous Action)

The following is a quotation of the first paragraph of 35 U.S.C. §112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

16. Claims 1-4 (now 1-22) are rejected under 35 U.S.C. 101 because the claimed invention is not supported by either a specific asserted utility or a well established utility.

The claimed invention is an abstract idea as explained in the 35 USC 101 claim rejection above. There may be a specific and substantial utility present in the specification, however it is not claimed.

Claims 1-4 are also rejected under 35 U.S.C. 112, first paragraph. Specifically, since the claimed invention is not supported by either a -specific and substantial-- asserted utility or a well established utility for the reasons set forth above, one skilled in the art clearly would not know how to use the claimed invention.

17. Further, Claims 1-4 (now 1-22) are rejected under 35 U.S.C. §112, first paragraph because current case law (and accordingly, the MPEP) require such a rejection if a §101 rejection is given because when Applicant has not in fact disclosed the practical application for the invention, as a matter of law there is no way Applicant could have disclosed how to practice the undisclosed practical application. This is how the MPEP puts it:

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("The how to use prong of section 112 incorporates as a matter of law the requirement of 35 U.S.C. §101 that the specification disclose as a matter of fact a practical utility for the invention.... If the application fails as a matter of fact to satisfy 35 U.S.C. §101, then the application also fails as a matter of law to enable one of ordinary skill in the art to use the invention under 35 U.S.C. §112."; In re Kirk, 376 F.2d 936, 942, 153 USPQ 48, 53 (CCPA 1967) ("Necessarily, compliance with § 112 requires a description of how to use presently useful inventions, **otherwise an applicant would anomalously be required to teach how to use a useless invention.**") See, MPEP 2107.01(IV), quoting In re Kirk (emphasis added).

Therefore, claims 1-4 are rejected on this basis.

Claim Rejections - 35 USC § 112nd

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

- 18. Claim 1-22 rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.**

Regarding Claim 1-4 (Repeated)

Claim 1 discloses the limitation in preamble “rules having a constraint that references a non-ancestral family to the constraint” which can be interpreted two different ways. Non-ancestral family could be child node (not the ancestor), or another interpretation could be a completely non-related family (e.g. low suspension in car needs bucket seats in a car, where the bucket seats and suspension nodes are not related). Examiner therefore requests a specific definition for the term “non-ancestral family” and its supported in the specification.

For the reasons mentioned above the claim 1 is indefinite. Claim 2 does not remedy this deficiency and claims 3 & 4 recite the same in preamble, and therefore are rejected likewise.

Further, no patentable weight is given to the limitation presented in the preamble started from the letter wherein as it bears no consequence on the steps of the method. Further, the implied limitation “non-cyclic chain of dependencies among the families and features of the families” is a definition for the directed acyclic graphs (DAG) and is well known in the art.

If the first interpretation for “non-ancestral family” is taken then each node in the DAG references its “non-ancestral” child node in a rule to decide which child node to select.

Regarding Claim 1-22 (New)

Claim 1 discloses “A method of consolidating using a computer system to consolidate multiple models using an automated process”.

This claim is indefinite because it is not clear which statutory category the claim should be examined under – i.e. a “method” claim or a “system” claim.

Secondly, applicant has amended the “automated process” in preamble and is not considered to be a limitation for reasons below. (a) Claim preamble language may not be treated as a limitation where it merely states an intended use of the system and is unnecessary to define the invention, the U.S. Court of Appeals for the Federal Circuit ruled May 8 (Catalina Marketing Int'l Inc. v. Coolsavings. com Inc., Fed. Cir., No. 01-1324, 5/8/02).

(b) Even if “consolidating the models” by an “automated process” is considered to be a limitation, this does not patentably distinguish the limitation from prior art.

MPEP 2144.04 III states:

In re Venner, 262 F.2d 91, 95, 120 USPQ 193, 194 (CCPA 1958) (Appellant argued that claims to a permanent mold casting apparatus for molding trunk pistons were allowable over the prior art because the claimed invention combined “old permanent-mold structures together with a timer and solenoid which automatically actuates the known pressure valve system to release the inner core after a predetermined time has elapsed.” The court held that broadly providing an automatic or mechanical means to replace a manual activity which accomplished the same result is not sufficient to distinguish over the prior art.)

Independent claims 3, 4 and 22 suffer from same deficiency and rejected likewise.

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Dependent claims 2 and 5-9 are rejected based on their dependency on rejected claim 1. Dependent claims 1-15 are rejected based on their dependency on rejected claim 3. Dependent claims 16-21 are rejected based on their dependency on rejected claim 4.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

19. Claims 1-22 are rejected under 35 U.S.C. 102(b) as being anticipated by U.S. Patent

Publication No. 2002/0165701 by Lichtenberg et al (Lichtenberg hereafter).

Regarding Claim 1 (Updated)

Lichtenberg teaches a method of consolidating multiple models in to a single consolidated model that maintains the non-cyclic dependencies (being a directed acyclic graph) among the families and feature of the families (described as component & associated rules) (Lichtenberg: [0076][0094][0062], Fig.1).

Lichtenberg teaches wherein each model comprises only rules that define a non-cyclic chain of dependencies among families and features of families (Lichtenberg: [0062]-[0073]) and at least one model includes a rule that causes a configuration conflict with another model (Lichtenberg: [0062], [0090], [0092]-[0094], [0102]-[0105], [0134]-[0150] – partial DAG representing features and families, [0162], [0191], [0383] – incompatibility between selected model and reconfiguration).

Regarding Claim 2

Lichtenberg teaches detecting any inconsistencies between rules included in the consolidated model (Lichtenberg: [0090]-[0094] – non-compatible products) and

attempting to resolve any detected inconsistencies by not allowing the user to select a inconsistent solution (Lichtenberg: [0096]-[0108]).

Regarding Claim 3-4 (Updated)

Limitations presented in claims 3-4 are similar to limitations presented in claim 1 and rejected likewise. Lichtenberg teaches a system (Lichtenberg: [0043]) and a computer program (Lichtenberg: Fig. 2-3, [0272]) for implementing the method of claim 1. *Lichtenberg teaches wherein each model comprises only rules that define a non-cyclic chain of dependencies among families and features of families (Lichtenberg: [0062]-[0073]) and at least one model includes a rule that causes a configuration conflict with another model (Lichtenberg: [0062], [0090], [0092]-[0094], [0102]-[0105], [0134]-[0150] – partial DAG representing features and families, [0162], [0191], [0383] – incompatibility between selected model and reconfiguration).*

Regarding Claim 5

Lichtenberg teaches wherein the models represent configuration models of vehicles (Lichtenberg: Fig.1 – Showing a bicycle).

Regarding Claim 6

Lichtenberg teaches wherein the consolidated model includes only buildable configurations (Lichtenberg: [0406]-[0412] – excluding incompatible selections).

Regarding Claim 7

Lichtenberg teaches combining the models into a single, consolidated model further comprises extending a rule from one of the models into an ancestor of a family of a defining constraint (Lichtenberg: [0062], [0076]); and repairing the extension of the

rule in a child of the ancestor of the family of the defining constraint (Lichtenberg: [0133]-[0150]).

Regarding Claim 8

Lichtenberg teaches combining the models into a single, consolidated model further comprises loading the models into a memory of the computer system (Lichtenberg: [0027]-[0034], [0224]-[0233], [0272]-[0274]); constructing a directed acyclic graph of all rules in all the models (Lichtenberg: [0272]-[0274]); for each model, determining which portions of an overall configuration space for which the model does not provide a buildable configuration (Lichtenberg: [0008], [0060] and [0090]); and for each model, constraining statements of the rules within the model to fall within a space of defining features of the model (Lichtenberg: [0061]-[0062]).

Regarding Claim 9

Lichtenberg teaches

"determining which portions of an overall configuration space for which each model does not provide a buildable configuration further comprises determining which families are ancestors of families of defining constraints and subtracting a right hand side and a left hand side of each rule of each family that are ancestors of families of defining constraints from a rule representing all buildable configurations."

as providing an intersection to provide all compatible (buildable) or incompatible (un-buildable) products (Lichtenberg: [0085]-[0094]).

Regarding Claim 10

System claim 10 discloses similar limitations as claim 2 and is rejected for the same reasons as claim 2.

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Regarding Claim 11

System claim 11 discloses similar limitations as claim 5 and is rejected for the same reasons as claim 5.

Regarding Claim 12

System claim 12 discloses similar limitations as claim 6 and is rejected for the same reasons as claim 6.

Regarding Claim 13

System claim 13 discloses similar limitations as claim 7 and is rejected for the same reasons as claim 7.

Regarding Claim 14

System claim 14 discloses similar limitations as claim 8 and is rejected for the same reasons as claim 8.

Regarding Claim 15

System claim 15 discloses similar limitations as claim 9 and is rejected for the same reasons as claim 9.

Regarding Claims 16-21

Computer program product claims 16-21 disclose similar limitations as claim 2, 5-9 and are rejected for the same reasons as claims 2, 5-9 respectively.

Regarding Claim 22

Limitations presented in claim 22 are similar to limitations presented in claim 1 and rejected likewise. No specific support was cited for "means for" language and is this claim is interpreted ordinarily.

Conclusion

20. THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

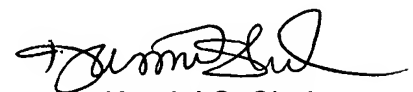
Communication

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Akash Saxena whose telephone number is (571) 272-8351. The examiner can normally be reached on 9:30 - 6:00 PM M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Kamini S. Shah can be reached on (571)272-2279. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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